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EXAMINER	
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ART UNIT	PAPER NUMBER
1796	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/522,571	APPELMAN ET AL.	
	Examiner	Art Unit	
	Megan McCulley	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 December 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) *1,2,5-12,14-24,26-31,33,35-40 and 45-54* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5-12,14-24,26-31,33,35-40 and 45-54* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 6, 47 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulhaupt et al. (U.S. Pat. 4,952,645) in view of Groff (U.S. Pat. 3,576,903).

Regarding claims 1, 6, 47, and 53: Mulhaupt et al. teaches a heat-curable (col. 13 lines 52-61) composition comprising an epoxy resin (col. 3 lines 18-25, formula VI) and a polymeric impact modifier comprising a dimer fatty acid residue (col. 5 lines 15-17). While Mulhaupt et al. does not directly teach that the composition is capable of phase separation upon curing to form phase-separated domains and/or particles comprising the impact modifier, since all of the components are present in the composition and it is cured in the same manner as the instant application, it is implicit that the composition would have this property. If it is applicants' position that this would not be the case: (1) evidence would need to be presented to support applicants' position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain a composition with this property.

Mulhaupt et al. does not teach the impact modifier is a polyamide, a polyurethane, a polyesteramide, a copolymer formed from a polyester and a polyamide,

or a polyurethane formed from a polyester. However, Groff teaches a similar composition comprising a copolymer of an ester and an amide (col. 1 lines 65-72). Mulhaupt et al. and Groff are analogous art since they are both concerned with the same field of endeavor, namely epoxy resin coatings. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the copolymer of an ester and an amide of Groff with the composition of Mulhaupt et al. and would have been motivated to do so for such desirable properties as high heat resistance and high solvent resistance, as evidenced by Groff (col. 2 lines 40-50).

Mulhaupt et al. does not teach that when the impact modifier is polyester, the polyol component consists of residues of polyols with a molecular weight of 50-200 or dimer fatty diols. However, Groff teaches a polyester made with only 1,4-butanediol (example 1), which has a molecular weight of 90.1 g/mol. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the polyester made by Groff with the composition of Mulhaupt et al. and would have been motivated to do so since Groff discloses that controlling the molecular weight of the polyester is important for flexibility and curing (col. 2 lines 50-65).

Claims 2, 48, and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulhaupt et al. (U.S. Pat. 4,952,645) in view of Groff (U.S. Pat. 3,576,903).

Regarding claims 2, 48 and 54: Mulhaupt et al. teaches a cured composition (col. 13 lines 52-61) comprising a reaction product of an epoxy and an impact modifier/polyester (col. 12 lines 63-67), the impact modifier comprising a dimer fatty acid

(col. 5 lines 15-17). While Mulhaupt et al. does not directly teach the phase-separated domains and/or particles comprising the impact modifier, the cured product is made by the same method as the instant composition, and would therefore implicitly form the phase-separated domains and/or particles; the method comprising the steps of (a) prepolymer formation/epoxy-impact modifier adduct formation (col. 12 lines 63-67), (b) epoxy resin composition formation/adding epoxy to the adduct (col. 13 lines 11-15), (c) film formation (col. 13 lines 20-22) and (d) cured under pressure (col. 13 line 30) of at least 10 tons per square foot. If it is applicants' position that this method would not inherently form the domains and/or particles: (1) evidence would need to be presented to support applicants' position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain a composition with this property.

Mulhaupt et al. does not teach the impact modifier is a polyamide, a polyurethane, a polyesteramide, a copolymer formed from a polyester and a polyamide, or a polyurethane formed from a polyester. However, Groff teaches a similar composition comprising a copolymer of an ester and an amide (col. 1 lines 65-72). At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the copolymer of an ester and an amide of Groff with the composition of Mulhaupt et al. and would have been motivated to do so for such desirable properties as high heat resistance and high solvent resistance, as evidenced by Groff (col. 2 lines 40-50).

Mulhaupt et al. does not teach that when the impact modifier is polyester, the polyol component consists of residues of polyols with a molecular weight of 50-200 or dimer fatty diols. However, Groff teaches a polyester made with only 1,4-butanediol (example 1), which has a molecular weight of 90.1 g/mol. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the polyester made by Groff with the composition of Mulhaupt et al. and would have been motivated to do so since Groff discloses that controlling the molecular weight of the polyester is important for flexibility and curing (col. 2 lines 50-65).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mulhaupt et al. (U.S. Pat. 4,952,645) in view of Groff (U.S. Pat. 3,576,903).

Regarding claim 20: Mulhaupt et al. teaches a prepolymer/adduct which is the reaction product of an epoxy and an impact modifier/polyester (col. 12 lines 63-67) with the impact modifier/polyester in an amount of 40% or 50% and the epoxy in an amount of 50% or 60% (Table top of col. 13). Mulhaupt et al. teaches that in formula 1, all of the radicals R^1 and R^3 can be derived from dimeric or trimeric fatty acids, and it is particularly preferred for R^1 to be a trimeric fatty acid (col. 7 lines 40-50). There are twice as may R^1 moieties as R^3, there is 33% dimeric fatty diol residue.

Mulhaupt et al. does not teach that when the impact modifier is polyester, the polyol component consists of residues of polyols with a molecular weight of 50-200 or dimer fatty diols. However, Groff teaches a polyester made with only 1,4-butanediol (example 1), which has a molecular weight of 90.1 g/mol. At the time of the invention a

person having ordinary skill in the art would have found it obvious to combine the polyester made by Groff with the composition of Mulhaupt et al. and would have been motivated to do so since Groff discloses that controlling the molecular weight of the polyester is important for flexibility and curing (col. 2 lines 50-65).

Claims 31, 5, 7-12, 26, 28-30, 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulhaupt et al. (U.S. Pat. 4,952,645) in view of Groff (U.S. Pat. 3,576,903).

Regarding claim 31: Mulhaupt et al. teaches a heat-curable (col. 13 lines 52-61) composition comprising an epoxy resin (col. 3 lines 18-25, formula VI) and a polymeric impact modifier comprising a dimer fatty acid (col. 5 lines 15-17). While Mulhaupt et al. does not directly teach that the composition is capable of phase separation upon curing to form phase-separated domains and/or particles comprising the impact modifier, since all of the components are present in the composition and it is cured in the same manner as the instant application, it is implicit that the composition would have this property. If it is applicants' position that this would not be the case: (1) evidence would need to be presented to support applicants' position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain a composition with this property.

Mulhaupt et al. does not teach that when the impact modifier is polyester, the polyol component consists of residues of polyols with a molecular weight of 50-200 or dimer fatty diols. However, Groff teaches a polyester made with only 1,4-butanediol

(example 1), which has a molecular weight of 90.1 g/mol. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the polyester made by Groff with the composition of Mulhaupt et al. and would have been motivated to do so since Groff discloses that controlling the molecular weight of the polyester is important for flexibility and curing (col. 2 lines 50-65).

Regarding claim 5: Mulhaupt et al. teaches the polyester comprises both dimer fatty acids and other dicarboxylic acids (col. 5 lines 15-68), in particular adipic acid (col. 5 line 47) where the aliphatic radical is tetramethylene. The preferred diol is butanediol, MW = 90 (col. 6 lines 52-55).

Regarding claim 7: Mulhaupt et al. teaches that in formula 1, all of the radicals R^1 and R^3 can be derived from dimeric or trimeric fatty acids, and it is particularly preferred for R^1 to be a trimeric fatty acid (col. 7 lines 40-50). There are twice as may R^1 moieties as R^3, there is 33% dimeric fatty diol residue.

Regarding claims 8-10: Mulhaupt et al. teaches the composition contains 100g of epoxy and 16.6 g of the impact modifier (col. 13 lines 11-13), which is calculated to a ratio of 6:1 epoxy to impact modifier. The polyester component is between 1 and 25% by weight (col. 9 lines 30-35). The fatty acid component would then be between 0.7% and 17.5% by weight if it is 70% of the polyester (col. 3 lines 19-22).

Regarding claims 11, 12: Mulhaupt et al. teaches reacting an epoxy with 40 or 50% of the impact modifier (col. 12 lines 60-65) and reacting that with an epoxy resin (col. 13 lines 1-15).

Regarding claim 26: Mulhaupt et al. teaches a heat-curable (col. 13 lines 52-61) adhesive (col. 10 lines 46-55) composition comprising an epoxy resin (col. 3 lines 18-25, formula VI) and a polymeric impact modifier comprising a dimer fatty acid (col. 5 lines 15-17).

Regarding claims 28 and 29: Mulhaupt et al. teaches reacting an epoxy with 40 or 50% of the impact modifier (col. 12 lines 60-65) and reacting that with an epoxy resin (col. 13 lines 1-15). Further, the impact modifier/polyester is taught being made with propylene oxide MW = 58 (col. 6 lines 44-48) and then mixed with diglycidyl ether based on bisphenol A (col. 13 lines 11-15), which has a molecular weight of 274 in its simplest form.

Regarding claim 30: Mulhaupt et al. teaches a method comprising curing an epoxy resin composition that had been placed between surfaces/curing a laminate (col. 13 lines 1-30).

Regarding claims 35-37: Mulhaupt et al. teaches a heat-curable (col. 13 lines 52-61) composition comprising an epoxy resin (col. 3 lines 18-25, formula VI) and a polymeric impact modifier comprising a dimer fatty acid (col. 5 lines 15-17) and the polyol neopentyl glycol (col. 6 lines 49-56).

Claims 33, 14-19, 21-24, 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulhaupt et al. (U.S. Pat. 4,952,645) in view of Groff (U.S. Pat. 3,576,903).

Regarding claim 33, 14-17, and 38-40: Mulhaupt et al. teaches a cured composition (col. 13 lines 52-61) comprising a reaction product of an epoxy and an impact modifier/polyester (col. 12 lines 63-67), the impact modifier comprising a dimer fatty acid (col. 5 lines 15-17) and the polyol neopentyl glycol (col. 6 lines 49-56), which has a molecular weight of 104 and no ether linkages. . While Mulhaupt et al. does not directly teach the phase-separated domains and/or particles comprising the impact modifier, the cured product is made by the same method as the instant composition, and would therefore inherently form the phase-separated domains and/or particles; the method comprising the steps of (a) prepolymer formation/epoxy-impact modifier adduct formation (col. 12 lines 63-67), (b) epoxy resin composition formation/adding epoxy to the adduct (col. 13 lines 11-15), (c) film formation (col. 13 lines 20-22) and (d) cured under pressure (col. 13 line 30) of at least 10 tons per square foot. If it is applicants' position that this method would not inherently form the domains and/or particles: (1) evidence would need to be presented to support applicants' position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain a composition with this property. Since the method it is the same, it would also form particles with a diameter in the range of 0.4 to 7 microns, have an aspect ratio in the range from 0.6 to 1.4:1, have less than 25% particles with a diameter less than 0.5 microns, and have less than 20% particles with a diameter greater than 5 microns.

Mulhaupt et al. does not teach that when the impact modifier is polyester, the polyol component consists of residues of polyols with a molecular weight of 50-200 or

dimer fatty diols. However, Groff teaches a polyester made with only 1,4-butanediol (example 1), which has a molecular weight of 90.1 g/mol. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the polyester made by Groff with the composition of Mulhaupt et al. and would have been motivated to do so since Groff discloses that controlling the molecular weight of the polyester is important for flexibility and curing (col. 2 lines 50-65).

Regarding claims 18 and 19: Physical properties of the composition are implicit in the composition as claimed. The Office recognizes that all of the claimed effects and physical properties are not positively stated by the reference. Note however, that the reference teaches all of the claimed ingredients, process steps and process conditions and thus, the claimed effects and physical properties would implicitly be achieved by carrying out the disclosed process. If it is the applicant's position that this would not be the case: (1) evidence would need to be presented to support applicant's position; and (2) it would be the Office's position that the application contains inadequate disclosure in that there is no teaching as to how to obtain the claimed properties and effects by carrying out only these steps.

Regarding claims 21-24: Mulhaupt et al. teaches a cured composition (col. 13 lines 52-61) comprising a reaction product of an epoxy and an impact modifier/polyester (col. 12 lines 63-67), the impact modifier comprising a dimer fatty acid (col. 5 lines 15-17). While Mulhaupt et al. does not directly teach the phase-separated domains and/or particles comprising the impact modifier, the cured product is made by the same method as the instant composition, and would therefore inherently form the phase-

separated domains and/or particles; the method comprising the steps of (a) prepolymer formation/epoxy-impact modifier adduct formation (col. 12 lines 63-67), (b) epoxy resin composition formation/adding epoxy to the adduct (col. 13 lines 11-15), (c) film formation (col. 13 lines 20-22) and (d) cured under pressure (col. 13 line 30) of at least 10 tons per square foot. If it is applicants' position that this method would not inherently form the domains and/or particles: (1) evidence would need to be presented to support applicants' position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain a composition with this property. Since the method it is the same, it would also form particles with at least 60% of the particles have diameter in the range of 0.8 to 5 microns, have an aspect ratio in the range from 0.7 to 1.3:1, have less than 25% particles with a diameter less than 0.5 microns, and have less than 20% particles with a diameter greater than 5 microns.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mulhaupt et al. (U.S. Pat. 4,952,645) in view of Groff (U.S. Pat. 3,576,903) as applied to claim 33 above and in view of Welke et al. (EP 1 026 218).

Regarding claim 27: Mulhaupt et al. teaches the epoxy adhesive used as a laminating resin (col. 10 line 53) comprising the basic claimed composition as set forth above. Mulhaupt et al. does not teach using the epoxy resin as an adhesive specifically for bonding electronic components to circuit boards. However, Welke et al. teaches the composition is used in the electronics industry to bond electronic components to

substrates (para. 74) which is a laminating process. Mulhaupt et al. and Welke et al. are analogous art since they both are from the same field of endeavor, namely epoxy/polyester resin compositions. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the teaching of Welke et al. with the composition of Mulhaupt et al. and would have been motivated to do so to extend the range of applications of the resin composition.

Claims 45, 49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulhaupt et al. (U.S. Pat. 4,952,645).

Regarding claim 45: Mulhaupt et al. teaches a heat-curable (col. 13 lines 52-61) composition comprising an epoxy resin (col. 3 lines 18-25, formula VI) and a polymeric impact modifier comprising a dimer fatty acid residue (col. 5 lines 15-17) and a non-dimer fatty acid residue such as ethylene glycol in an amount of 30% (col. 6 lines 40-45). While Mulhaupt et al. does not directly teach that the composition is capable of phase separation upon curing to form phase-separated domains and/or particles comprising the impact modifier, since all of the components are present in the composition and it is cured in the same manner as the instant application, it is implicit that the composition would have this property. If it is applicants' position that this would not be the case: (1) evidence would need to be presented to support applicants' position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain a composition with this property.

Regarding claim 49: Mulhaupt et al. teaches the polyester comprises both dimer fatty acids and other dicarboxylic acids (col. 5 lines 15-68), in particular adipic acid (col. 5 line 47) where the aliphatic radical is tetramethylene. The preferred diol is butanediol, MW = 90 (col. 6 lines 52-55).

Regarding claim 50: Mulhaupt et al. teaches the polyol neopentyl glycol (col. 6 lines 49-56).

Claims 46, 51, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulhaupt et al. (U.S. Pat. 4,952,645).

Regarding claim 46, 51 and 52: Mulhaupt et al. teaches a heat-curable (col. 13 lines 52-61) composition comprising an epoxy resin (col. 3 lines 18-25, formula VI) and a polymeric impact modifier comprising a polyester comprising both dimer fatty acids and other dicarboxylic acids (col. 5 lines 15-68), in particular adipic acid (col. 5 line 47). The polyol neopentyl glycol is also disclosed (col. 6 lines 49-56). While Mulhaupt et al. does not directly teach that the composition is capable of phase separation upon curing to form phase-separated domains and/or particles comprising the impact modifier, since all of the components are present in the composition and it is cured in the same manner as the instant application, it is implicit that the composition would have this property. If it is applicants' position that this would not be the case: (1) evidence would need to be presented to support applicants' position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain a composition with this property.

Response to Arguments

Applicant's arguments with respect to claims 1, 2, 5-12, 14-24, 26-31, 33, 35-40, and 45-54 have been considered but are moot in view of the new ground(s) of rejection. The arguments still pertaining to the above rejection were discussed in the advisory action dated December 7, 2009.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Megan McCulley whose telephone number is (571)270-3292. The examiner can normally be reached on Monday - Thursday 7:30-6:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/
Supervisory Patent Examiner, Art Unit 1796

/M. M./
Examiner, Art Unit 1796